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ABSTRACT

Diagramming composition as a control structure allows us to see the interaction between process and product and to discover that composition is not a linear process but starts and stops, returns and fixes, and moves ahead. In the interaction of three factors--the real world, the writer, and the reader--a text is produced. The objects, social influences, resources, goals, and situation of the real world are perceived by the writer who then processes, stores, develops the intention to communicate, plans, combines the topic and material into a meaning representation that is then put into a linear sequence (sentence, paragraph), creates the text, and evaluates. Thereupon the reader perceives the text, processes it, stores the processed text, changes his or her store of knowledge or experience, and communicates about the text. It is through diagramming a control structure such as this that the writing process and product can be understood. (TJ)

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THEORETICAL ISSUES IN THE PROCESS-PRODUCT CONTROVERSY

Robert de Beaugrande

IT WOULD BE HARD TO DISPUTE that the English curriculum has traditionally been dominated by a concern for products. The mainstay of English teaching was the literary text treated as a prestigious artifact. William K. Wimsatt even went so far as to stigmatize the concern for the processes of producing and reading texts as the "intentional" and "affective fallacies," respectively.[1]

The dominance of products was characteristic of other disciplines as well as English. Structural linguistics restricted its tasks to the discovery and classification of the superficial features of speech. Psychology admitted the existence of only such entities as could be directly observed in the laboratory. Philosophy of language reserved its consideration for formal logics as purely abstract representations of static meaning. Paradoxically, these disciplines seemed bent on getting rid of the legitimate objects of their inquiry: linguists evaded communication, psychologists shied away from the human mind, and philosophers had little to say about the use of knowledge in human affairs.

In such an academic atmosphere, the prevalence of a product-dominated approach to composition in past years is hardly surprising. There was simply no place where composition teachers could find research on processes. Surely a theory of composing can hardly be based on the phonemes and morphemes of linguists, the stimulus-response mechanism of psychology, or the empty formulae of logicians.

However, the academic scene has undergone a marked shift in the last decade, because the product-dominated theories and methods have egregiously failed to supply the needed insights in their respective disciplines —

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the literacy crisis being only one glaring example. Since the study of processes is vastly more complex than that of products and demands much more developed theories, the transition has been accompanied by stormy controversy. To illustrate the situation in the domain of composition theory, I shall attempt to clarify how considerations of process and product should interact in a model of the act of writing. I shall draw upon recent work in linguistics, cognitive psychology, and computer science.

An over-emphasis of processes would also be unproductive. A signal of such a trend is the rising uncertainty about evaluating student papers. Of course, it is not obvious (to say the least) that students who have a paper returned full of red marks will know how to re-align their writing procedures. But it is also not obvious that exclusive attention to the very large issues of mental processing must lead to better texts. The age-old dispute about whether to grade expression (form) or ideas (content) must necessarily emerge as a false alternative in a process-oriented approach. Instead, the focus of attention must be the <u>evolution</u> of ideas into expression.

The most challenging and compelling facet of composition is perhaps that to teach writing is, in part, to teach thinking. Modern methods, such as the one underlying Susan Miller's first-rate textbook, reflect this facet by including sections on "perception", "having ideas," "developing ideas," and so on.[2] The traditional long sections devoted to proscribing isolated mechanical errors have been shortened to provide space for discussions of the procedures of invention and arrangement. Thus, disorganized fix-it tactics are being displaced by a comprehensive evolutionary approach.

Unfortunately, language psychology cannot yet provide the insights that must support this trend in the domain of theory; however, the signals of change and progress are favorable. The stimulus-response model once deemed

suitable for explaining all mental activities in humans (or rats) is yielding to a model of flexible strategies. Along the way, much of the older theories of the mind are turning out to be artifacts of individual experiments. Given the task devised by the researcher anxious to prove some "theory," test subjects try their best to generate the desired results, because the mind is infinitely adaptable. The great mistake of old-style psychologists was to assume that the results of small, artificial experimentation can be generalized into a universal "theory" about what people do in real life. Here, the blind subordination of (large) processes to (tiny) products reached awesome extremes.[3]

A long tradition of behaviorism has bequeathed to language psychologists the use of unrealistic testing materials, especially word lists or even nonsense syllables. Doubtless such materials are thought to simplify the researcher's task. Yet as Walter Kintsch (one of the world's prominent exceptions to this restrictive practice) remarks, research in fact becomes much harder, because people can do so many more different things with isolated words or meaningless syllables than they can with coherent discourse.[4]

A comparatively young current of investigation which does admit at least short texts concerns the issue of <u>readability</u>. This research still bears some traces of past methods. For instance, behaviorist experiments were often organized in such as way that the <u>time</u> needed to perform a task was the central piece of data: time measurements are easy and yet lend the proceedings an appearance of mathematic rigor and respectability. Applied to readability tests, such a standard allows experimentation to move forward in absence of any detailed or workable theory of reading. But, quite aside from the fact that it seems strange to see scientists timing activities they don't understand, there are serious theoretical objections

to the time standard which I shall raise later on.

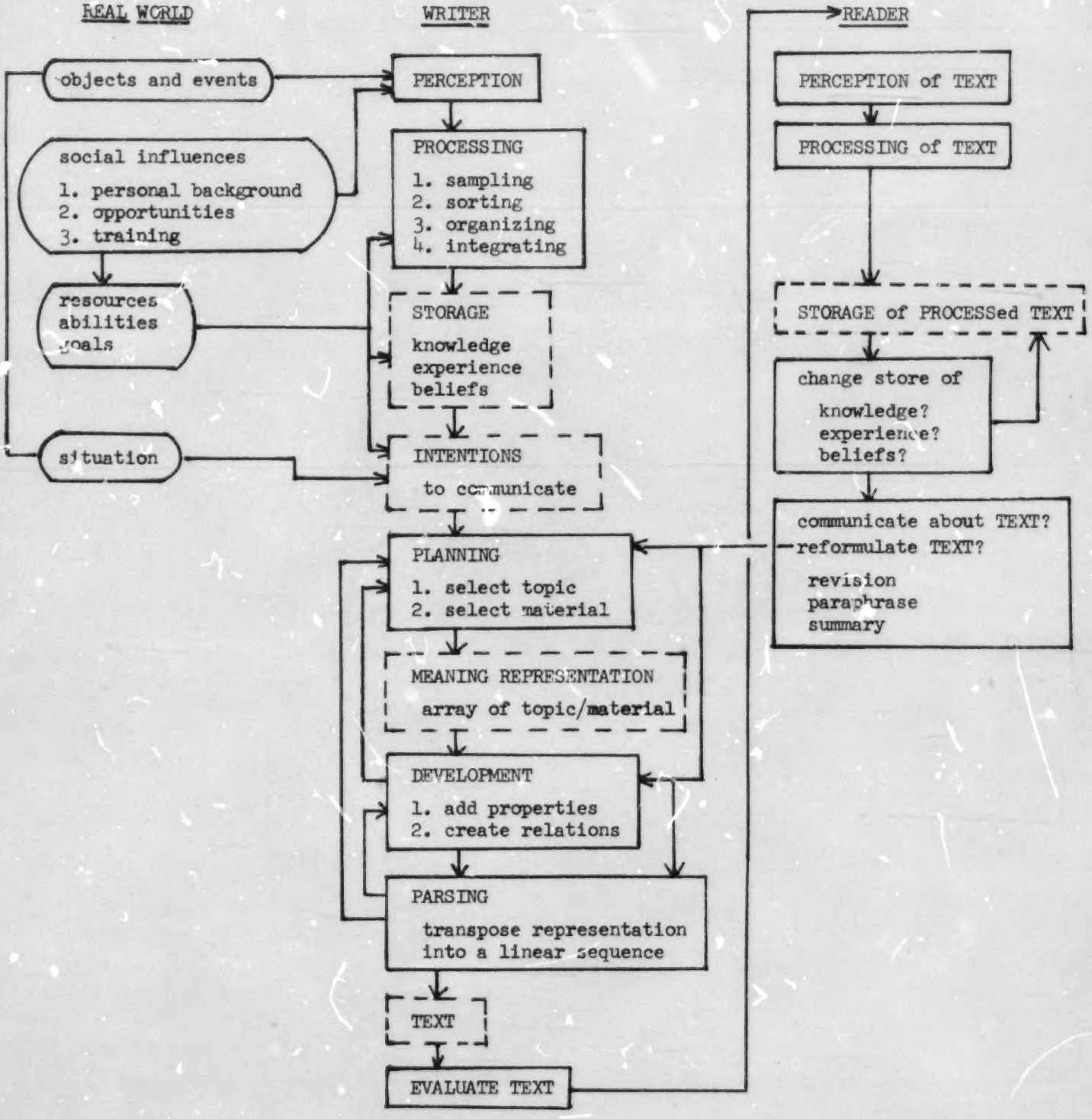
Although composition theory is clearly related to readability, two frequent assumptions about that relationship are surely too simplistic. One of those assumptions is that reading is merely the reversal of writing, and that we need merely turn reading theory backwards to have a theory of writing. On a very general plane, we may say that the writer transposes some meaningful entity into a linear text, while the reader transposes it back again. But this rather obvious, vaguely defined procedure is intertwined with processes that are not reversible. It is well documented that readers only sample the text and its content, supplying much of the expressed or unexpressed context by constantly generating predictions and expectations: here, reading runs parallel to writing rather than in the opposite direction. In other respects, writing and reading are wholly diverse processes. Writers do not merely "encode" the knowledge in their minds into a "message" which readers "decode" in their own minds. Writers carefully select only some portions of their knowledge about any topic, and the omissions or alterations along the way from the mind to the page may be as important to the writer's purpose as the actual "message" presented to the reader. Here, a factor enters the writing process which cannot be explained by observing reading.

The other assumption about readability is that we should identify and classify arbitrarily the features of texts accepted as readable, and recommend the use of those features to our students. That tactic means dealing with processes by backsliding into the long-standing preoccupation with products. Many approaches which call themselves "generative" -- including Christensen's, as far as I can judge -- are in fact analytic in this very way and hence product-oriented. Of course, the features of

readable texts have good reasons for being there. The mistake lies in prescribing surface features without understanding how they evolved or what functions they fulfill. What seems to be missing in the trend away from products toward processes is an understanding of the factor of CONTROL.

To clarify this crucial issue, I have drawn a diagram of the act of writing as a control structure (see next page), a common tool in computer programming. I have shown the processes in rectangles made of continuous lines, the products in dotted-line rectangles, and the factors external to the specific act of writing in ovals. The arrows indicate the directions in which control is passed along, though not necessarily in any sequence of real time.

The initial phase of the structure is that of perception. The "real world" is modelled on the one hand as a configuration of objects and events, and on the other as a sequence of situations. These entities are perceptually arranged along at least three major parameters: time, space, and causality. Perceptual arrangement occurs during the phase of mental processing, which subsumes at least four well-documented activities: sampling, sorting, organizing, and integrating. Although there are competing views on the precise nature of these four activities, their existence seems certain.[3] These activities explain why our store of knowledge, beliefs, and experience cannot be any direct mirror of the real world. Sampling is the selective action in which certain portions of presented input are accepted, while others are rejected. Sorting is then applied to the accepted input to determine how much of the latter is interesting, significant, or worthwhile. The material which sucessfully passes this second test must be organized: without organization, no material can be



PROCESS and PRODUCT in a control structure

(PROCESSES in line rectangles; PRODUCTS in dotted rectangles; external factors in ovals.)

effectively learned or used for any length of time.[3] The organizing can be internal to the material, when one seeks to discover its inherent principles of constitution; or integrative, when one classes the material as an instance of some already-stored configuration. In general, these two kinds or organizing are combined, so that one can speak of pattern-matching as a major mode of dealing with what humans perceive. Once the material has been organized, it is suitable for integration into the storage of knowledge, beliefs, and experience.

In the past, mental storage has often been envisioned as some kind of deposit in a safe. But recent research indicates that stored material is by no means a static stockpile. Material is often marked for specific uses, and can interact readily with other stored material or with newly entered input. Of course, such interaction can vary greatly, depending on the type of processing task at hand. These considerations are important for appreciating how predictions and expectations are generated during the reading process to be discussed below.

I have included social influences from the real world in the diagram to account for two important factors: 1) social reality is itself composed of perceptible material; and 2) social reality affects through opportunities and training the resources and abilities available to human processors. Still more important is the social determination of goals, since goals regulate motivation and hence the effort people are willing to expend on any task, including writing.

The traditional and much-debated notion of the writer's intention[5] is difficult to represent in a diagram. The intention is certainly a product of many sources, among which the store of knowledge/beliefs/experience and the immediate situation of the writer are extremely important. But we have no guarantee that a writer might not form an intention in opposition

to these sources, or even independently of them (although such intentions would be very difficult to carry out). I will content myself by interpreting the concept of intention here as a statement of what a text is supposed to accomplish, and hence as a product. The intention in turn controls how many cognitive and environmental factors are passed along to the phases of writing itself.

The major flaw of stimulus-response models is their inability to recognize the role of planning. For many years, psychologists slyly designed experimental situations in which planning was either impeded (e.g. by demands for speed) or ineffectual (e.g. when no options except trial-and-error were available). In addition, the substance of most experiments was quite irrelevant to people's personal goals and quite unlike any tasks posed in real life. Recently, however, first attempts have been made to overcome these defects. The complexities of planning are now better understood, due to computer models. As I have argued in detail elsewhere, the planning of discourse consists of evaluating the effects of utterances (or texts) as being desirable or undesirable from a given standpoint. Since there are often competing alternatives, writing demands the skill of anticipating effects accurately enough to select the most favorable utterances.[6]

Two major aspects of planning are the selection of topic and related material. I assume that topic and material are assembled in an array which, in cognitive psychology and computer science, is often called a meaning representation. This array is the most abstract basis of a text and deserves to be called "deep structure," if we wish to use that much-misused term at all. The representation consists not so much of words and phrases as of concepts: abstract and generic clusters of meaning which may be expressible in various words or phrases in appropriate contexts. Hence, the meaning

representation is not a simple linguistic entity like an outline or a summary, but its relative topography should be reflected in a good outline or summary.

Control now passes on to two further processes during which the transition from the meaning representation into a text is accomplished: semantic development and syntactic/grammatical parsing. The process of development includes: 1) the addition of properties to the objects and events derived from the meaning representation, and 2) the discovery or creation of relations between concepts. As I have set forth in detail elsewhere, this phase of writing can be envisioned as building a network of associative links. Some links are conventional and thus recoverable from common stores of knowledge of the world, while others are original, being created for the purposes of that particular text. The original links in turn open up new possibilities for further linking, but a skillful writer makes use only of those options which are motivated by the intended flow and hierarchy of the text. Diverse illustrations of this thesis can be found in my other articles.[7] The important consideration here is that properties and relations are links in a network, and thus further processing is needed to produce a linear sequence of text.

That processing is accomplished by parsing. There are at least three important control factors in parsing. First, there is a set of allowable syntactic patterns and grammatical inflections stipulated by the normal grammar of the language. Second, there are techniques to distribute the roles of participants in sentences, such as agent, object, instrument, and so on, with respect to the verb. Third, sentences receive an information contour which reflects the distinctions between what is given or new, and important or unimportant. The co-ordination of these three types of parsing

is sufficiently intricate that, to my knowledge, no computer program for generating English has successfully modelled all three at once.[8] It is hardly surprising that the treatments given parsing matters by most composition handbooks are inadequate. Handbooks are fond of "rules of thumb" that are extremely difficult to discover in this domain.

Both in parsing and in semantic development, there are usually competing options open to the writer. Some options are unmarked, occurring in the normal order of experience and discourse, and can be processed with comparative ease. Other options are marked, falling outside the range of the most frequent conventions, and are both more informative and harder to process. To deal with markedness considerations, I would propose a principle I might call proportionality of effort to motivation and effect. This principle requires that unmarked options in one area should be mapped onto unmarked options in others, while marked options should be mapped onto marked options. In other words, writers should demand increased reading effort from readers only when some aspect of the total message is inherently demanding. In traditional terms: difficult expression is justified only by difficult content.[9]

The structure of English sentences can illustrate the principle of proportionality. The unmarked syntactic pattern is subject followed by verb. The unmarked distribution of roles is agent-action-object. The unmarked distribution of information is given (or less prominent) information followed by new (or more prominent). There will be many cases when all three unmarked options are usable at once: the agent of the action is the grammatical subject and conveys given or less prominent information. Sentences of this kind are maximally easy to read and demand the least time. But I am certain that a whole essay of nothing but this kind of sentence would not be

readable: it would be mortally dull. Here is a (mercifully) short example:

> I saw a strange man. He was leading a dog. The dog had white spots. The spots annoyed another dog. That dog broke its leash. The leash hurt the hand of the dog's owner. . .

Now we can consider the mapping of marked options. A good illustration can begin with the negative sentence, which is indeed harder to process than a positive. Anyone who is not convinced should try saying to someone:

> The quality of this essay is not dissimilar to the opposite of uninspiring.

The difficulty of processing is due to the fact that a reader or hearer must first create some fact or relationship and then add on the negation(s).[3] In context, a negative signals that readers should revise some expectation. Since unexpected material is harder to process by definition, the use of a negative is an ideal strategy to activate the additional energy required. But a writer can do even more. In another study, I discussed a poem that begins with these words:

> GHOSTS
>
> Those houses haunt in which we leave
> Something undone. It is not those
> Great words or silences of love
> That spread their echoes through a place . . .

The negatives undone and not alert the readers that conventional expectations about ghosts are to be revised here. Instead of haunting houses where great crimes have occurred, ghosts are said to haunt hauses where something did not occur. The author (Elisabeth Jennings) wen still further by placing the element those houses out of its normal syntactic position after the verb acting upon it. Moreover, the word those carries a heavier stress than the opening syllables of the other lines. Hence, the following marked options have been mapped onto each other: (1) negation, (2) unexpectedness, (3) syntactic displacement, and (4) irregular rhythm. In the second sentence, the negation has been mapped not only onto unexpected information about great words, but

also onto the marked "cleft" construction beginning It is not. . . which places greater focus upon the agent of the verb spread than a simple grammatical subjects would have (Great words do not spread. . .). One can go a step further and note that these ghosts are themselves serving in an original metaphor. Doubtless, the energy activated to deal with marked options of all kinds will help the reader discover the significance of that metaphor (i.e., ghosts as people who failed to act at a crucial moment).[10]

Even this all too brief demonstration should characterize the application of the principle of proportionality to making specific decisions about the options of semantic development and parsing. It should be clear why reading ease and shortness of reading time are not the standards to measure the quality of a readable text: many highly rewarding configurations of language necessarily demand extra time and effort.

It is quite possible that specific decisions such as those illustrated above may require that previous decisions in the control chain must be reconsidered. I have used arrows to show that control may be accordingly passed back up the chain, even reaching into the large-scale concerns of planning. Such a return of control can be described as recursion, with the steps being repeated until an acceptable text evolves. My own experience leads me to believe that this kind of recursion is a weak point in student writing habits. A remedy would be to transfer control to a full-scale sequence of evaluation by a reader, as the diagram suggests.

The reader may be the writer in person, though at first outside readers will probably be needed as well. I have drawn the diagram to indicate that the act of reading should be seen as one instance of perception, processing, and storage as discussed above. Hence, the effectiveness of the text depends entirely on its internal organization and its potential for integration into the reader's store of knowledge and beliefs. The text may succeed in changing the latter

or eliciting intentions to communicate about the text. If the writer becomes his or her own reader, a disquieting paradox can ensue. Having produced the text, our writer-reader is already in full possession of the underlying meaning representation and may fail to notice obstacles to comprehension or ineffective choices which another reader would readily observe. In addition, the (re)reading process is accompanied by a sequence of completely fulfilled predictions, causing a loss of attention and energy.

To overcome such problems, research on readability can be applied at this point. Instead of reading in the usual way, our writer-reader focuses attention on the specific effects of selected options, noting the occurrence and justification for marked and unmarked options. Of course, much more research is needed in this area. At present, Walter Kintsch and I are conducting experiments on the correlation of a number of writing variables with reader comprehension and recall. As research progresses, the strategies made available for evaluation by a writer-reader such as the one envisioned here will become continually more specific. Only then can writers know whether they have "generated" a text which carries out their plans and intentions.

I hope that my remarks have shed some light on the controversy over process and product. These terms are not a mere alliterative shibboleth for composition teachers, but rather the central concepts for any viable theory of composing. I have essayed to explain why I believe that such a theory should portray the interaction of process and product in an ordered sequence of control.

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notes

[1] William K. Wimsatt, The Verbal Icon (Lexington: University of Kentucky Press, 1967).

[2] Susan Miller, Writing: Process and Product (Cambridge, Mass.: Winthrop, 1976).

[3] Concerning my remarks here on the historical development of language psychology, as well as on mental processing and on the use of negation later on, see especially Walter Kintsch, Memory and Cognition (New York, Wiley, 1977).

[4] Kintsch, p. 301f.

[5] See for instance E.D. Hirsch, Validity in Interpretation (New Haven: Yale University Press, 1967), for a literary perspective; and I.M. Schlesinger, Production and Comprehension of Utterances (Hillsdale, N.J.: Erlbaum, 1977) for a psychological perspective.

[6] Robert de Beaugrande, "Text and Sentence in Discourse Planning," in János Petőfi ed., Text vs. Sentence: Basic Questions in Text Linguistics (Hamburg: Buske, 1978).

[7] Robert de Beaugrande, "The Processes of Invention: Association and Recombination," CCC, 30/1 (February, 1979); and "Toward a General Theory of Creativity," Poetics, 8/1 (Winter 1979).

[8] On the three factors, see Michael A.K. Halliday, "Notes on Transitivity and Theme in English," Journal of Linguistics, 3 (1967), 37-81 and 199-244, and 4 (1968), 179-215; František Daneš, "A Three-Level Approach to Syntax," Travaux Linguistiques de Prague, 1 (1964), 225-40; and Petr Sgall, Eva Hajičová, and Eva Benešová, Topic Focus, and Generative Semantics (Kronberg/Taunus, Germany: Scriptor, 1973).

[9] Cf. E.D. Hirsch, The Philosophy of Composition (Chicago: University of Chicago Press, 1977), 150-51.

[10] See Robert de Beaugrande, "Information, Expectation, and Processing," Poetics, 7/2 (Spring 1978), 3-44.